

Table of excessive and greatest monthly precipitation—December, 1884.

Station.	Specially heavy.		Largest monthly.	Station.	Specially heavy.		Largest monthly.
	Date.	Amt.			Date.	Amt.	
Alabama.				Illinois—Cont'd.			
Prattville.....	14	3.50	8.39	Springfield.....	27, 28	2.79	
Tusculum.....	21	2.54	7.03	Brunker Hill.....	27, 28	3.08	
Clanton.....	14	2.79	7.06	Logansport.....	27, 28, 29	3.81	
Carrollton.....	14	3.10	7.05	Indiana.			
Gadsden.....	14	2.00	6.91	Princeton.....		7.70	
Do.....	21	2.25		Marengo.....		7.55	
Florence.....	21	2.32	6.53	Wilmington.....		7.20	
Mount View.....	20, 21	3.00	6.45	Fillmore.....		7.04	
Greensboro.....			6.09	Corydon.....		6.85	
Greene Springs.....	14	2.05		Farmland.....		6.79	
Wetumpka.....	14	2.50		Greencastle.....		6.74	
Tuscaloosa.....	14	3.40		Huntingburg.....		6.60	
Marion.....	14	2.00		Degonia Springs.....		6.52	
Edwardsville.....	21	2.00		Spiceland.....	27	2.71	
Arizona.				Lafayette.....		6.47	
Fort Bowie.....	13	2.30	6.41	Mauzy.....		6.14	
Phoenix.....	12, 13	2.50		Indianapolis.....	27, 28	2.39	
San Carlos.....	27, 28	2.04		Columbus.....		6.05	
Arkansas.				Terre Haute.....	27	2.25	
Little Rock.....	27 to 30	11.23	16.92	Louisiana.			
Mount Ida.....	10, 11	3.75	15.95	Point Pleasant.....	5	3.01	20.39
Do.....	26 to 30	10.35		Do.....	14	5.01	
Lead Hill.....	10, 11	2.06	11.37	Do.....	20, 21	4.03	
Do.....	26, 27, 28	5.82		Do.....	28, 29, 30	8.03	
Fort Smith.....	27, 28	2.69	6.30	Shreveport.....	10, 11	3.55	15.55
California.				Do.....	27 to 30	13.41	
Emigrant Gap.....			31.20	Grand Coteau.....	10	3.25	14.43
Colfax.....			23.60	Do.....	16, 17	2.45	
San Raphael, near	17 to 21	11.45	20.96	Do.....	27 to 30	4.67	
Do.....	23 to 26	7.59		New Orleans.....	13, 14	2.49	8.01
Cieco.....			25.00	Luling.....			6.13
Auburn.....			10.37	Maine.			
Calistoga.....			15.08	Eastport.....	7	2.38	8.63
Delta.....			10.41	Do.....	21, 22	3.74	
Bedding.....			14.51	Portland.....	15	2.30	6.42
Fort Gaston.....	15, 16, 17	4.61	14.49	Orono.....	20, 21	2.20	
Do.....	21, 22, 23	4.68		Maryland.			
Alta.....			14.08	Fallston.....	6	2.80	6.05
Aptas.....			11.34	Ocean City.....			6.04
Truckee.....			13.24	Massachusetts.			
Sacramento.....	17 to 26	10.30	10.45	Princeton.....	6, 7	4.83	9.59
Napa.....			10.16	Do.....	21, 22	3.75	
Santa Cruz.....			8.91	Milford.....			7.70
Gilroy.....			8.83	Fall River.....	6, 7	2.00	6.94
Ione.....			8.22	Northampton.....			6.51
Tennant.....			8.11	Rowe.....	6	2.00	
Petaluma.....			8.07	New Bedford.....	21, 22	2.00	
Angel Island.....			7.85	Michigan.			
Rocklin.....			7.75	Marquette.....	6, 7	2.59	8.65
Oakland.....			7.73	Kalamazoo.....			7.14
Red Bluff.....	16, 17, 18	3.76	7.73	Grand Haven.....	29, 30	2.42	6.80
San Francisco.....	19, 20	2.25	7.68	Boyne.....			6.52
Do.....	23, 24	2.53		Mackinaw City.....			6.48
San Mateo.....			7.59	Mississippi.			
Suisun.....			7.46	Vicksburg.....	28 to 31	9.25	14.09
Pajaro.....			7.45	Missouri.			
Boca.....			8.20	Pro Tem.....			11.37
Benicia Barracks.....	24, 25, 26	4.54	7.19	Pierce City.....	5	2.00	10.10
Dunningan.....			7.16	Do.....	10, 11	3.00	
Fall Brook.....	12, 13	2.21	7.15	Springfield.....	28, 29	2.40	7.62
Fort Bidwell.....			6.81	Ironton.....			7.47
Farmington.....			6.21	Centerville.....			7.22
Brighton.....			6.17	Carthage.....			6.91
Galt.....			6.06	Saint Louis.....	27, 28	3.09	6.18
Princeton.....	16, 17	2.48	6.03	New Jersey.			
South Valejo.....			6.03	Atlantic City.....	21, 22	3.14	7.71
Los Angeles.....	25	3.01		Barneget City.....	21, 22	3.02	7.09
Poway.....	25	2.07		Readington.....			7.00
Piedra de San				Cape May.....	21, 22	3.19	6.87
Francisco.....	23	2.00		Vineland.....			6.53
Connecticut.				Paterson.....	6, 7	2.35	
Voluntown.....	6, 7	2.90	8.00	Little Egg Harbor.....	21, 22	2.01	
Do.....	15	2.00		New York.			
Do.....	21, 22	2.20		David's Island.....	6	2.25	8.75
Wallingford.....			7.52	Do.....	21, 22	3.25	
Shelton.....			7.37	New York City.....	21	2.10	6.66
New London.....	6, 7	2.27	7.30	Fort Columbus.....	21, 22	2.28	6.44
Middleton.....			7.20	West Point.....			6.20
Bethel.....	21, 22	2.00	6.52	Fort Jervis.....	6	2.32	
Southington.....			6.45	White Plains.....	6	2.40	
New Haven.....	21, 22	2.21	6.41	Fort Hamilton.....	14	2.10	
Hartford.....			6.09	North Carolina.			
Norfolk.....			6.04	Brevard.....	5, 6	2.85	10.25
Florida.				Do.....	14, 15	2.78	
Newport.....	5	3.80	10.99	Do.....	20, 21	2.75	
Do.....	12, 13, 14	3.98		Kelley's, near			
Do.....	21, 22	2.08		Raleigh.....			9.40
Cedar Keys.....	5, 6	5.16		Lincolnton.....			9.32
Georgia.				Lenoir.....	5, 6	2.60	8.10
Quitman.....	6	3.70	6.60	Do.....	14	2.00	
Atlanta.....	14	3.74	6.09	Hatteras.....	21, 22	2.73	7.41
Athens.....	14, 15	2.95		Chapel Hill.....	5, 6	3.01	6.98
Augusta.....	21, 22	2.16		Weldon.....	5, 6	2.68	
Idaho.				Charlotte.....	21, 22	2.12	
Albion.....	14	2.00	7.34	Oregon.			
Boise City.....	16, 17	2.22		Roseburg.....	16, 17	3.35	9.20
Illinois.				Fort Klamath.....	22, 23, 24	3.60	8.68
Anna.....	28, 29, 30	6.30	9.57	Albany.....	17, 18	3.84	7.83
Cairo.....	11	2.46	8.99	Portland.....			7.52
Do.....	27 to 30	4.94		Astoria.....			6.55
McLeansboro.....			5.21	Eola.....			6.09
Collinsville.....	27, 28	3.02	7.62	Pennsylvania.			
Mascoutah.....			6.90	Tamaqua.....	6	2.30	7.40
Rockford.....			6.51	Westchester.....	6, 7	2.62	7.00

Table of excessive and greatest monthly precipitation—Continued.

Station.	Specially heavy.		Largest monthly.	Station.	Specially heavy.		Largest monthly.
	Date.	Amt.			Date.	Amt.	
Pennsylvania—C'd.				Tennessee—Cont'd.			
Quakertown.....			6.46	Farmington.....	21	2.25	6.73
Wellsborough.....	6, 7	4.66	6.39	Parkersville.....	21	2.72	6.51
Easton.....			6.07	Grief.....	21	2.70	6.49
Fallsington.....			6.00	Carysville.....	14	2.00	6.21
Lafayette.....	6	2.00		Do.....	21	2.10	
Bloomington.....			2.90	Howell.....	21	2.46	6.19
Rhode Island.				Knoxville.....	20, 21	2.37	6.11
Pawtucket.....			7.07	Marysville.....	21, 22	3.65	6.00
Nyat Point.....	6, 7	2.10	7.03	Pulaski.....	21	2.10	
Providence.....			6.59	Covington.....	28, 29	2.84	
Block Island.....			6.56	Grassy Cove.....	21	2.06	
Narragansett Pier			6.34	McMinville.....	21	2.10	
South Carolina.				Texas.			
Aiken.....	6, 7	2.04	6.02	Galveston.....	27, 28	6.71	9.44
Do.....	22, 23	2.25		Clarksville.....	28, 29, 30	4.00	7.48
Pacolett.....			6.00	Palentine.....	10, 11	3.77	6.94
Stateburg.....	6, 7	3.65		Fort Concho.....	9, 10	2.90	
Tennessee.				Utah.			
Memphis.....	28, 29, 30	5.35	9.14	Nephi.....	21, 22	2.40	
Dyersburg.....	27, 28, 29	5.01	8.85	Virginia.			
Somerville.....	29, 30	2.39	7.91	Lynchburg.....	21	6.74	11.81
Milan.....	27, 28	2.03	7.25	Dale Enterprise.....	6	2.00	
Fostoria.....	14	2.00	7.20	Washington Ter.			
Do.....	21	2.85		Olympia.....	18, 19	3.67	
Trenton.....	28, 29, 30	3.62	7.14	Wisconsin.			
Flat Creek.....	21	2.62	7.04	Franklin.....	29, 30	2.25	
Chattanooga.....	21, 22	2.91	6.80				

Connecticut.—Hartford, 21st.

Delaware.—Delaware Breakwater, 10th, 24th.

District of Columbia.—Washington City, 14th.

Illinois.—La Fayette, 27th.

Iowa.—Guttenberg, 1st; Independence and Monticello, 27th; Ottumwa, 30th.

Kansas.—Wyandotte, 9th, 30th; Yates Centre, 30th.

Louisiana.—Liberty Hill, 26th.

Maine.—Gardiner, 21st.

Maryland.—Woodstock, 14th, 20th.

Massachusetts.—Westborough, 22d.

Michigan.—Fort Brady, 31st; Boyne, 27th.

New York.—Fort Columbus, 9th, 14th; Factoryville, 21st.

North Carolina.—Weldon, 18th, 21st.

Pennsylvania.—Dyberry, 14th; Easton, 15th.

South Carolina.—Stateburg, 22d.

Texas.—Fort Concho, 30th; Clarksville, 4th.

Virginia.—Fort Myer, 14th; Wytheville, 6th; Dale Enterprise, 21st.

Washington Territory.—Port Angeles, 5th; Pysht, 25th.

Wisconsin.—Embarras, 9th, 23d, 27th, 30th, 31st; Manitowoc, 27th.

SNOW FROM A CLOUDLESS SKY.

Toledo, Ohio: snow fell from a cloudless sky from 10.35 to 10.55 p. m. on the 26th.

WINDS.

The most frequent directions of the wind during December, 1884, are shown on chart ii. by arrows flying with the wind; they were from north to northwest in the upper Mississippi and Missouri valleys, and extreme northwest; from south to west in the lake region; from northeast to northwest on the Atlantic coast; from east to south in the Gulf states; in the remaining districts they were variable.

HIGH WINDS.

(In miles per hour.)

High winds occurred during the month as follows:

Sandy Hook, New Jersey, 60 n., 19th.

Barneget City, New Jersey, 56, s., 6th.

Cape May, New Jersey, 60, w., 9th.

Delaware Breakwater, Delaware, 51, nw., 9th.

Cape Henry, Virginia, 54, nw., 9th.

Kitty Hawk, North Carolina, 60, n., 18th.

Buffalo, New York, 64, sw., 15th.

Rochester, New York, 54, w., 15th.

Fort Elliott, Texas, 60, n., 4th.

Tatoosh Island, Washington Territory, 64, e., 16th.

Cape Mendocino, California, 108, se., 16th.

On the summits of Mount Washington, New Hampshire and Pike's Peak, Colorado, velocities of fifty miles or more were reported on the following dates:

Mount Washington, 2d, 6th to 10th, 14th to 17th, 19th, 20th, 21st, 23d, 27th, to 31st. The maximum velocity, 96, nw., occurred on the 19th.

Pike's Peak, 8th, 15th, 16th, 24th; (maximum velocity, 73, w., on the 15th).

LOCAL STORMS AND TORNADOES.

Alabama.—Mobile: during the afternoon of the 18th the bark "Nannie Bell" dragged anchor and was driven on a sand-bar on the opposite side of the river; no damage resulted.

California.—Red Bluff: the Signal Service observer reports northerly gales on the 6th, which continued during the night. At Red Bluff the velocity of the wind did not exceed thirty-eight miles per hour, but a much higher velocity was attained in the eastern part of the county. At the Champion lumber mills, thirty miles north of this place, a large number of trees, varying in size from six inches to four feet in diameter, were blown down. This storm is considered to have been one of the severest ever experienced in this part of the state.

San Francisco: a violent storm prevailed at this place on the 7th, the wind reaching a velocity of forty-five miles per hour between 6 and 7 a. m. The greatest damage was done along the water front; the breakwater at the foot of Green street was completely washed away, and two sections of the sea wall were crushed in. Several vessels in the harbor broke from their moorings and were blown ashore, while many others sustained damage.

Colorado.—Colorado Springs: an unusually severe storm prevailed during the night of the 18-19th; trees and telegraph lines were prostrated.

Louisiana.—New Orleans, 28th: a southeasterly gale began at 11.10 a. m. and ended at 2.20 p. m., the wind reaching a velocity of twenty-eight miles per hour at 1.30 p. m.; at 11.50 p. m. the wind again reached a velocity of twenty-five miles per hour, and continued high until 2.25 a. m. on the 29th.

Shreveport: a heavy rain and thunder-storm from the south-east occurred during the night of the 29-30th, the wind attaining a velocity of twenty-six miles per hour from 4.45 to 5.00 a. m. Reports from the surrounding country state that telegraph lines were prostrated, and that the heavy rains caused the streams to rise rapidly; washouts occurred on the railroads.

New Jersey.—Trenton: several buildings at this place were badly damaged and many telephone wires were broken down by the storm of the night of the 6-7th.

New York.—New York City: a severe snow and rain squall occurred on the afternoon of the 9th, the wind reaching a velocity of forty miles per hour at 2.57 p. m.

Ohio.—Columbus: a high northwesterly wind began at 8.21 a. m.; a wind velocity of thirty miles per hour occurred at 9.15 a. m.

Pennsylvania.—Pittsburg: a high westerly wind prevailed for a short time between 1 and 2 p. m. on the 9th; a velocity of thirty-six miles per hour was recorded.

Erie: high southwest to northwest winds prevailed from 9.15 a. m. to 3.13 p. m. on the 9th; a velocity of thirty-five miles per hour from the northwest occurred at 12.14 p. m.

Chester: at 9 p. m. on the 6th a violent storm passed over this place, moving from southwest to northeast; about twenty houses in this city were unroofed and much other damage was done.

Easton: a storm of unusual violence occurred during the evening of the 6th, being most violent at about 10 p. m.; the rainfall was very heavy, and caused streams in this vicinity to rise rapidly.

Virginia.—Fort Myer: high wind prevailed from 1.30 to 6.15 p. m. on the 9th, reaching its height at 2.55, when a

velocity of forty-two miles per hour was recorded. A wind velocity of thirty-eight miles occurred on the 23d.

Cape Henry: at 3.43 p. m. on the 9th the wind suddenly shifted from southwest to northwest and increased in force from sixteen to fifty-four miles per hour.

Reports from the vicinity of Urbana, Middlesex county, on the Rappahannock river, state that a violent storm occurred on the 9th, during which about twenty-five oyster boats were capsized and nearly all the boatmen were drowned.

Washington Territory.—Fort Canby: the Signal Service observer reports that a southeasterly gale occurred during the night of the 2-3d. During the following day the sea was unusually rough and the tides very high. The steamship "Wilamette," in attempting to enter the harbor, sustained damage; a heavy sea swept over the vessel washing two men overboard and clearing the decks of everything. On the 16th a high wind began at 6.30 p. m., and between 7 and 8 p. m. the wind blew at the rate of one hundred and four miles per hour. Considering the violence of this storm but little damage was done. Violent gales also prevailed at Fort Canby during the 23d and 24th. During the night of the 23-24th, the ship "Chesborough," lying at Sand Island, dragged anchor for a distance of two miles against a strong flood tide, and grounded on the extreme northeast end of Clatsop Spit, about four miles from station.

Port Angeles: from 5 to 5.35 p. m. on the 5th, a violent hailstorm, accompanied by thunder and lightning, passed over this station. The hail stones were very small but fell with great force and in sufficient quantity to cover the ground to a depth of about three fourths of an inch.

The following reports of tornadoes which occurred during December have been received:

Plum Branch, Edgefield county, South Carolina: a tornado occurred in the southwestern part of Clarendon county, in this state, on the 22d. The tornado cloud was funnel-shaped and moved northeastward, destroying everything in its path, which was about fifteen miles in length and 1,500 feet in width. Several persons were injured; a number of horses and cattle were killed, and several buildings were destroyed.

Atlanta, Georgia: a tornado occurred in Oconee and Oglethorpe counties at 2.00 p. m. on the 22d. The width of the tornado's path was two hundred and twenty-five feet. Several buildings and much timber were destroyed.

On the evening of the 24th a tornado passed through Berrien county; the cloud was of the usual funnel-shape, and it descended to the earth but for a moment, but in that time it destroyed all the buildings on plantations and scattered the farm produce.

Pine Ridge, Twiggs county, Georgia: a tornado occurred six miles southwest of Macon, in this state, at 11 a. m. on the 22d. It is described as "swooping down for a distance of three hundred yards and then ascending." Only one plantation was struck by the tornado, but all the buildings thereon were destroyed; no loss of life occurred.

NAVIGATION.

STAGE OF WATER IN RIVERS.

At Shreveport, Louisiana, the Red river reached a navigable stage, six feet and six inches on the 16th; on the 29th a sudden and unusual rise occurred, the river having risen five feet and three inches in twenty-four hours.

Navigation on the Cumberland river at Nashville, Tennessee, was resumed for the season on the 16th. Steamboat men at this place state that the date of the opening of navigation for the present season is one of the latest known.

The Mississippi river was frozen throughout the month at Saint Paul, Minnesota; at La Crosse, Wisconsin, it froze on the 17th; at Dubuque and Davenport on the 18th, and at Keokuk on the 21st; at these stations it remained frozen after the dates named.

The Missouri river froze at Yankton, Dakota, on the 15th;